

In the Claims:

1. (Withdrawn) A method of generating adult stem cells comprising implanting at least one micro-organ derived from adult tissue in a mammal in a manner enabling migration of cells out of said at least one micro-organ, said cells being adult stem cells.

2. (Withdrawn) The method of claim 1, further comprising isolating said adult stem cells migrating out of said at least one micro-organ

3. (Withdrawn) The method of claim 2, wherein said adult stem cells are isolated from a biological fluid collected from said mammal.

4. (Withdrawn) The method of claim 1, wherein said at least one micro-organ is of dimensions selected such that cells positioned deepest within said at least one micro-organ are at least about 100 micrometers and not more than about 225 micrometers away from a nearest surface of said at least one micro-organ.

5. (Withdrawn) The method of claim 1, wherein said adult tissue is of a type selected from the group consisting of skin, kidney, lung, liver and bone marrow.

6. (Withdrawn) A method of inducing stem cells differentiation, the method comprising co-culturing isolated stem cells and at least one micro-organ, thereby inducing stem cells differentiation.

7. (Withdrawn) The method of claim 6, wherein said stem cells are adult stem cells.

8. (Withdrawn) The method of claim 6, wherein said stem cells are embryonic stem cells.

9. (Withdrawn) The method of claim 6, wherein said co-culturing is effected in a serum-free medium.

10. (Withdrawn) The method of claim 6, wherein said at least one micro-organ is of dimensions selected such that cells positioned deepest within said at least one micro-organ are at least about 100 micrometers and not more than about 225 micrometers away from a nearest surface of said at least one micro-organ.

11. (Withdrawn) The method of claim 1, wherein said at least one micro-organ is derived from an adult tissue of a type selected from the group consisting of skin, kidney, lung, liver and bone marrow.

12. (Withdrawn) A method of inducing stem cells differentiation, the method comprising culturing isolated stem cells in micro-organ conditioned medium, thereby inducing stem cells differentiation.

13. (Withdrawn) The method of claim 12, wherein said stem cells are adult stem cells.

14. (Withdrawn) The method of claim 12, wherein said stem cells are embryonic stem cells.

15. (Withdrawn) The method of claim 12, wherein said micro-organ conditioned medium is serum-free medium.

16. (Withdrawn) The method of claim 12, wherein said at least one micro-organ is of dimensions selected such that cells positioned deepest within said at least one micro-organ are at least about 100 micrometers and not more than about 225 micrometers away from a nearest surface of said at least one micro-organ.

17. (Withdrawn) The method of claim 12, wherein said at least one micro-organ is derived from an adult tissue of a type selected from the group

consisting of skin, kidney, lung, liver and bone marrow.

18. (Currently Amended) A method of generating an artificial micro-organ comprising:

- (a) providing devitalized, acellular, tissue-derived three dimensional scaffold, said acellular three dimensional scaffold being of dimensions selected such that when populated with cells, said cells positionable deepest within said scaffold are at least about 100 micrometers and not more than about 225 micrometers away from said cells positioned at a nearest surface exposed to a source of gas and nutrients formed on said scaffold; and
- (b) seeding said acellular three dimensional scaffold with stem cells, progenitor cells or ~~homologous~~ differentiated cells, wherein said differentiated cells are of the same tissue from which the scaffold was generated, and
- (c) providing conditions for cell growth and proliferation.

19. (Cancelled)

20. (Previously Presented) The method of claim 18, wherein said stem cells are adult stem cells.

21. (Previously Presented) The method of claim 18, wherein said stem cells are embryonic stem cells.

22. (Currently Amended) The method of claim 18, wherein said cells seeded on said acellular three dimensional scaffold are a mixed population of cells including stem cells, progenitor cells and ~~homologous~~ differentiated cells, wherein said differentiated cells are of the same tissue from which the scaffold was generated.

23. (Original) The method of claim 18, wherein said cells seeded on said acellular three dimensional scaffold are genetically transformed to express at least one exogenous polypeptide.

24. (Previously Presented) The method of claim 18, wherein said stem cells are genetically transformed to express at least one exogenous polypeptide.

25. (Previously Presented) The method of claim 18, further comprising the step of generating said acellular three dimensional scaffold from a tissue-derived micro-organ.

26. (Previously Presented) The method of claim 25, wherein said step of generating is effected by subjecting said tissue-derived micro-organ to conditions selected suitable for removing cells and not acellular matrix from said micro-organ.

27. (Original) The method of claim 25, wherein said micro-organ is derived from an adult tissue of a type selected from the group consisting of skin, lung, kidney, liver and bone marrow.

28. (Currently Amended) The method of claim 25, wherein said progenitor cells are ~~homologous~~ progenitor cells derived from the same tissue source as said micro-organ.

29. (Withdrawn) A method of isolating adult stem cells comprising culturing at least one micro-organ derived from an adult tissue in a culture and isolating cells migrating out of said at least one micro-organ, said cells being adult stem cells.

30. (Withdrawn) The method of claim 29, wherein said culturing is effected under conditions suitable for maintaining said cells migrating out of said at least one micro-organ in an undifferentiated state.

31. (Withdrawn) The method of claim 29, wherein said culturing is effected under conditions suitable for propagation of said cells migrating out of said at least one micro-organ.

32. (Withdrawn) The method of claim 29, wherein said at least one micro-organ is of dimensions selected such that cells positioned deepest within said at least one micro-organ are at least about 100 micrometers and not more than about 225 micrometers away from a nearest surface of said at least one micro-organ.

33. (Withdrawn) The method of claim 29, wherein said adult tissue is of a type selected from the group consisting of skin, kidney, liver, lung and bone marrow.